



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D2741

Job Sheet 179092

Part No: D2741

Job Qty: 40 ea

Part Name: Replacement Blade



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 6/13/18

Job Tracking No:

Created By: Marie Lajeunesse

Due Date: 7/2/18

Description:

Note: DWG REV E IPP Rev: D 00.11.15 Removed P/O turning - in house process EC IPP Rev: E 06-03-20 As Per
Rev C JLM IPP Rev: F

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	40 Ea	7/2/18	7/2/18	0.00	0.00	Start Up Machining-1		SBZ 15/06/19
100	Bandsaw	40 pcs	7/2/18	7/2/18	0.00	3.11	Bandsaw1		SBZ 15/06/19
110	CNC Vertical Machining	40 pcs	7/2/18	7/2/18	0.00	27.45	HAAS1-2		SBZ 15/06/19
130	QC	40 pcs	7/2/18	7/2/18	0.00	0.00	QC8 Machining-1		SBZ 15/06/19
140	Small Fab	40 pcs	7/2/18	7/2/18	0.04	0.68	Small Fab-2		SBZ 15/06/19
150	QC	40 pcs	7/2/18	7/2/18	0.00	0.00	QC5		SBZ 15/06/19
160	Outsource	40 pcs	7/2/18	7/2/18			ATL002-VC		SBZ 15/06/19
170	Packaging	40 pcs	7/2/18	7/2/18	0.00	0.00	Packaging2		SBZ 15/06/19
180	QC	40 pcs	7/2/18	7/2/18	0.00	0.00	QC56		SBZ 15/06/19
190	HandFinish	40 pcs	7/2/18	7/2/18	0.00	2.47	HandFinish4		SBZ 15/06/19
200	Powdercoat	40 pcs	7/2/18	7/2/18	0.00	1.02	Powdercoat2		SBZ 15/06/19
210	QC	40 pcs	7/2/18	7/2/18	0.00	0.00	QC3		SBZ 15/06/19
220	Packaging	40 pcs	7/2/18	7/2/18	0.00	0.00	Packaging3-1		SBZ 15/06/19
230	QC21-SA	40 Ea	7/2/18	7/2/18	0.00	0.00	QC21		SBZ 15/06/19

Part Op 100 - Cut blanks 13.850" long +0.063" -0.000"

Descriptions: 110 - 1-Machine per folio FA108

140 - 1-Deburr

160 - Issue P/O 40514

170 - Ensure Test report or Certification attached

190 - clean with wash & wipe to remove oil

200 - START TIME: 2:00pm 2:16pm 3:50F

AUG 20 2018 D2741

S082286

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
M4130NB0.500X03.000	4130 Bar 0.500 X 3.00	46.1640 ft (1.1541 ea)	90-Start up Operation	S007337

S007337 → S007337

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	M4130NB0.500X03.000	46	60	0

Part Specifications

Spec No	Description	Target/Tolerance	Limits	Type	Special Comments
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1	Blade	1.500Inches ± 0.010	1.510 1.490		1,499
2	Blade	0.715Inches ± 0.010	0.725 0.705		,718
3	Blade	0.516Inches $+ 0.008$ $- 0.001$	0.524 0.515	Diameter	,516
4	Blade	2.000Inches ± 0.030	2.030 1.970		2,020
5	Blade	13.750Inches ± 0.010	13.760 13.740		13,756
6	Blade	1.060Inches $+ 0.012$ $- 0.001$	1.072 1.059	Diameter	,106
7	Blade	0.150Inches ± 0.010	0.160 0.140		,151
8	Blade	2.930Inches ± 0.030	2.960 2.900		2,930
9	Blade	0.375Inches ± 0.010	0.385 0.365		,369
10	Blade	0.250Inches ± 0.030	0.280 0.220		,250
11	Blade	0.250Inches ± 0.030	0.280 0.220		,250

Plex 6/13/18 11:48 AM Dart.lajeunesse.marie

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
329170	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
40514	N/A	4130		
SPÉCIFICATIONS DU PROCÉDÉ processing specifications SEL HARDEN HARDEN AND TEMPER SAE AMS 2759/1 REV.E				
EXIGENCE / requirement	SPÉCIFICATIONS / specified		TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	34 - 40 HRC		50	37 - 40 HRC
TENSILE	152 - 182 KSI			166 - 182 KSI
VALUES CONVERTED FROM HARDNESS				
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description		
50	172.5	D2741 BLADE (50) D2741 JOB 179092 1 BOITE DE BOIS		

COMMENTAIRES / comments

SALT HARDEN 1575F, 40 MIN
SNAP TEMPER 400F, 2 HRS
TEMPER 875F, 4 HRS

Heat treatment (HT) was performed with equipment that meets the requirements of AMS2759 & AMS2750. All HT operations were in compliance with AMS2759 and all verifications have been performed and documented. No unauthorized changes were performed in regards to the HT. We certify that the material was manufactured, sampled, tested and inspected in accordance with AMS2759 and the purchase order and was found to meet the requirements. This document and any attached documents may contain confidential or proprietary information and may be subject to export control laws and regulations. If you are not the intended recipient, you are notified that any dissemination, copying of this e-mail and any attachments thereto or use of their contents by any means whatsoever is strictly prohibited. Unauthorized export or re-export is prohibited.

Le traitement thermique (TT) a été fait en utilisant des équipements en conformité avec AMS2759 et AMS 2750. Le TT a été fait tel que requis par AMS2759 et toutes les vérifications et les tests demandés ont été faites et documentés. Aucun changement n'a été faite par rapport au TT. On certifie que le matériel a été fabriqué, échantillonné, testé et inspecté en accord avec AMS2759 et le bon de commande et le matériel rencontre les exigences spécifiées. Ce document et les documents qui lui sont joints peuvent contenir des informations confidentielles, être soumis aux réglementations relatives au contrôle des exportations ou ayant un caractère privé. S'ils ne vous sont pas destinés, nous vous signalons qu'il est strictement interdit de les divulguer, de les reproduire ou d'en utiliser de quelque manière que ce soit le contenu. Toute exportation ou réexportation non autorisée est interdite.

Isabel Otero
QA Technician



01 AOUT 2018

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
329170	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
40514	N/A	4130		

SPÉCIFICATIONS DU PROCÉDÉ processing specifications

SEL HARDEN

HARDEN AND TEMPER

SAE AMS 2750/1 REV.E

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	34 - 40 HRC	50	37 - 40 HRC
TENSILE (KSI)	152 - 182 KSI		166 - 182 KSI

DAS
61
9-89

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
50	172,5	D2741 BLADE (50) D2741 JOB 179092 1 BOITE DE BOIS

7/8/12

COMMENTAIRES / comments

APPROUVÉ par / Approved by:



DATE: 2018-08-01

APPROUVÉ

METCOR INC.

560 BOUL. ARTHUR-SAUVE, ST-EUSTACHE, QC, J7R 5A8

Tél. 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450-491-6454

Certificat de Conformité

Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
329170	1

CLIENT / customer: 210

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

LIVRE À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
40514	N/A	4130		

SPECIFICATIONS DU PROCÉDÉ

processing specifications

SEL HARDEN

HARDEN AND TEMPER

S4E AMS 2759/1 REV.E

EXIGENCE / requirement	SPECIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	34 - 40 HRC	50	37 - 40 HRC
TENSILE (KSI)	152 - 182 KSI		160 - 182 KSI

QUANTITE quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
50	172.5	D2741 BLADE (50) D2741 JOB 179092 1 BOITE DE BOIS

COMMENTAIRES / comments

APPROUVÉ par / Approved by:



DATE: 2018-08-01

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Reçu de livraison

Delivery Receipt

BON DE TRAVAIL Order	EXPÉDITEUR Shipper ID	BON D'EXPÉDITION Shipper
329170	1	129980

EXPÉDITION COMPLÈTE / Shipped Complete

CLIENT /Customer 215

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053



LIVRÉ À /Shipped To

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

COMMANDE DU CLIENT Customer PO	BON DE LIVRAISON DU CLIENT Customer Shipper No.	TYPE DE MATÉRIEL Material Type	DATE DE LA COMMANDE Order Date	TRANSPORTEUR Carrier
40514		4130	2018/7/17	client

QUANTITÉ Quantity	No. PIÈCE Part No.	NOM DE LA PIÈCE Part Name	DESCRIPTION DE LA PIÈCE Part Description	POIDS Weight
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50 D2741 ✓
BLADE
(50) D2741
JOB 179092

172,5

1 BOITE DE BOIS

TYPE DE CONTENEUR Container Type	# DE CONTENEURS # Of Containers	COMMENTAIRES CONTENEUR Container Comments
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BOITE DE BOIS

1

certificat

EMPAQUETAGE Packing	
------------------------	--

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 50

POIDS EXPÉDIÉ / Weight Shipped : 172,50

QUANTITÉ RESTANTE / Quantity Remaining : 0

POIDS RESTANT / Weight Remaining : 0,00

APPROUVE

certificat

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 50

POIDS EXPÉDIÉ / Weight Shipped : 172,50

Signature:

Date:



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040514**

Supplier: MEI001-VC
Metcor Inc.
560 Boul. Arthur Sauve
Saint-Eustache
QC
J7R 5A8 Canada
Phone: 450 473 1884
Fax: 450 491 5498

PO No: PO040514
PO Date: 7/17/18
Due Date: 7/24/18
Purchase Order
Revision:
Revision Date:
Ship-To Contact: Tsimiklis, Chrisoula
Phone:

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pyrm Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	179092	D2741	Replacement Blade Issue P/O: _____ HEAT TREAT TO MIN. ULTIMATE TENSILE STRENGTH = 152 ksi AND MIN. YIELD TENSILE STRENGTH = 141 ksi PER MIL-S-6758 AFTER MACHINING. ACCEPTABLE TO VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 34-40 HRC.	Firmed	-	7/24/18	50 pcs	0 pcs	50 pcs	\$12.54/pcs	\$627.00
Grand Total:											\$627.00

Order Notes

CT.

Order Notes

Procurement Quality Clauses

A005 right of entry

A012 chemical and physical test report

A016 personnel qualification

A017 raw material identification (as applicable)

A022 Apical Processing

A024 process certifications

A026 certification of material conformance

A041 quality management system

A042 dart notification by supplier

A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 7/19/18 8:15 AM dart.tsimiklis.chrisoula

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: 2B Date: SEP 17 2020Work Order update only ☐Work Order: 179092Part No. 02741NCR No. 20-8676Date: 18-06-28

Description V

DISPOSITION

 Rework ☐
 Scrap ☒
 Use-as-is ☐

 Skid-tube ☐
 Machining ☒

AGAINST DEPARTMENT/PROCESS

 Cross tube ☐
 Small Fab ☐

 Water Jet ☐
 Prod. Eng. Coord. ☐
 /Packaging Supplier ☐

 Engineering ☐
 Quality ☐
 Other ☐

 Part: D2741
 Job No: 179092
 Serial No/Batch: S082286
 Revision: _____
 Inspector: _____
 Exp Date: _____
 Instructions: _____

 DART AEROSPACE
 1270 Abernethy Street
 Hamilton, ON K6A 1K7
 Canada
 Tel: 1 613 622-8200
 Email: sales@dartaero.com
 www.dartaerospace.com

MRB (QS1042) Approval

18-12-12

Completed By

SBL 18-06-28

Lead hand / Supervisor Approval Verification

18/06/28

QC / QA Coordinator Approval

18-12-12

Operator did not enter the right Data in the cnc controller, resulting in the contour of the parts is off the center, by 0.025po.

Scrap and destroy
no replace

Root Cause

Environment	☐	No Re-verification	☐
Design	☐	Operator	☒
Doc/Data	☐	Offset/Setup	☐
Equip/Tooling	☐	Supplier	☐
Handling/Pre	☐	Training	☐
Material	☐	Use for Testing	☐
Internal Transport	☐	Poor Information	☐
Tribal Knowledge	☐	Rushing	☐
LOA	☐	Product Improvement	☐
Substation	☐	Process Improvement	☐
Past Expiry Date	☐	Manufacturing Process	☐
Misidentified	☐	Past Due	☐

NOT CONCENTRIC

 Cracks ☐
 Crimp/Kink/Ripple/Wave ☐
 Cuffs ☐
 Crushing ☐
 Heat Treat ☐
 Wave/Twist in Tube ☐
 Marks/Chatter ☐

 BOM/Route ☐
 Broken/Damage/Defect ☐
 Inspection Incomplete/Unqualified ☐
 Contamination ☐
 Countersink ☐
 Cut Too Short ☐
 Instructions Incomplete/Unclear ☐
 Drill Holes ☐

 Program ☐
 Grain ☐
 Weld ☐
 Wrong Stock Pulled ☐
 Out of Sequence ☐
 Off-set ☐
 Misabeled ☐
 Fit/Function ☐
 Misaligned/off center ☐

 Positioned Wrong ☐
 Outside Dimensions ☒
 Over/Under tolerance ☐
 Part Incorrect ☐
 Part Lost/Missing ☐
 Part Moved ☐
 Drawing ☐
 Finish ☐
 Misread ☐
 Turning Sequence ☐

OTHER :